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Students Create Mobile Learning Applications for Droid

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Students in Professor [Klara Nahrstedt's](#) CS 425 Distributed Systems course had a unique opportunity this semester. Test their course knowledge by creating applications to help other students test theirs.

Students in the class spent their semester applying their skills in distributed systems to the task of learning to use the Google Android development platform. The semester culminated in a head-to-head competition to see who could create the best learning-focused application.

The course and the applications are a part of a new research project underway at Illinois computer science called Mobile Learning Communities. The project aims to enable students to share trusted educational services with each other via iPods, cell phones, and other mobile devices. The team is tackling the challenge from every angle: multimedia, social computing, distributed systems, networking, educational technology, communication, and trust. Student projects in CS 425 were the first set of student-driven technologies in the project. The ultimate goal is to create a peer-to-peer networking and community, as well as a shared repository for many more of these kinds of student-developed applications.

The CS 425 competition was judged by faculty from computer science, as well as a representative from Qualcomm's Research & Development team, Dr. Dave Craig.

Dave had some tips for the student developers before the competition. "The number one challenge in creating mobile applications is that it's just different. There are display restrictions, debugging restrictions, and logging and instrumentation restrictions that you aren't used to if you've been programming exclusively on and for desktop-type applications," said Craig. Craig sees classes and competitions like Prof. Nahrstedt's as essential for any student wanting to get into mobile application development.

As more and more computing moves to a mobile platform – where applications can come to the user, rather than the user going to the applications, the distinctions between stationary and mobile computing are getting more blurry, according to Craig. "Applications are really starting to mature, which will engender a whole new productivity using the network."

The applications developed by the CS 425 students leveraged these new capabilities and productivity to create a suite of applications designed with student life in mind. Drawing from their own experiences as students, and with class experiences fresh in their minds, the students produced new applications to help both in and out of class.

A look at the 3 winning applications:

G-Clicker (Hyun Duk Kim, Chia-chia Lin, Hee Dong Jung)

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G-Clicker is a Google phone application that aims to create an interactive education environment. With today's tools, instructors often encounter obstacles when trying to interact with the entire class. Instructors can get responses from only some of students and always struggle with repeating announcements or pointing students where to download materials. "To solve these problems, we proposed G-Clicker, an advanced tool which greatly enhances interactions between instructors and students," said Kim. "We believe it will create a much more effective education environment. G-Clicker provides functions like instant quiz, class material distribution, announcement posting, notifying instructor and voice message recording through G-phone."

Indoor Localization (Wee Hong Yeo, Yun Wei Chang, Samuel Retika)

The Indoor Localization tool allows user to locate its position indoors using Wifi signals fingerprinting. Two views are created for the user, the Map View and the Real View.

The Map View shows the floor plan of the building at various details. It allows the user to scroll or zoom the map. The Real View shows what the user sees through the Android's phone camera and utilizes the compass and accelerometer to further determine orientation. The application will show the user position as well as other peers position in both views. Different categories of points of interests (POIs) can be drawn on top of either views, allowing the user to navigate around the building

Quiz Application (Craig McIntyre, Ohm Patel, Michael Ford)

"To make the student-professor interaction simpler and more involved we created an Android based Quiz System similar to the iClicker that is being used by students today," said Patel, referring to the iClicker education system developed by a group of Physics professors at Illinois. The Quiz System is a hefty approach to accomplishing all the tasks required in administering quizzes. Through the server's web front end, the professor has the ability to create quizzes, start and stop quizzes, view grades, check attendance and more. Using an Android enabled device, students can participate in quizzes, save their answers, review their grades and even check in for attendance. The main goal of the Quiz System is to enable students to learn interactively and enable professors to educate at a higher level.

Students in networking classes next semester will test some of the winning applications in real-world settings, by using the platforms in class.